

REMARKS

The present document is submitted in reply to the Office Action dated October 16, 2008 ("Office Action").

Applicants have amended claims 1, 15-17, 19, 22, 23, 25, and 27-30 to more particularly point out the subject matter they deem as their invention. Support for the amendments can be found, e.g., in the specification at page 10, lines 19-20 and in original claim 13. Applicants have further amended claims 2, 3, 5-7, 9, 11, and 12 to promote clarity. Finally, Applicants have cancelled claim 13 and changed dependency of claims 14, 15, and 17. These amendments have not introduced new matter. Note that claim 26 was cancelled previously.

Upon entry of the present amendments, claims 1-12, 14-25, and 27-30 will be pending and under examination. Applicants respectfully request that the Examiner reconsider this application in view of the following remarks.

Objection to the Title

The Examiner objects to the title, i.e., "Improved Treatment Process," as being not sufficiently descriptive. See the Office Action, page 2, item 1. For the sole purpose of accelerating prosecution, Applicants have replaced the current title with "Improved Treatment Process for Conditioning a Lignocellulosic Substrate."

Rejection under 35 U.S.C. § 102

The Examiner rejects claims 24, 25 and 27-30, all of which are product-by-process claims, as being anticipated by Sato *et al.*, US Patent No. 5,245,154 ("Sato"). See the Office Action, page 2, item 2. More specifically, he holds the position that the product made by the process disclosed in Sato is identical to the claimed products made by the processes required by these claims. Applicants respectfully disagree.

Claim 24 will be discussed first. This claim covers a lignocellulosic substrate prepared by the process defined in claim 1, including the steps of (1) heating the substrate in a constrained environment at ambient pressure, using radio frequency energy, and (2)

reducing pressure in the constrained environment **in a manner causing the moisture within the substrate to boil or evaporate**. As pointed out in the specification, “[r]eduction in pressure in the constrained environment should occur rapidly, and preferably abruptly to enhance the boiling effect.” See page 10, lines 19-20. In view of this teaching, a skilled person in the art would readily know that the phrase “reducing pressure ... **in a manner causing the moisture within the substrate to boil or evaporate**” means **rapid reduction of pressure**. In other words, he or she would understand that the lignocellulosic substrate of claim 24 is prepared by a process including **a rapid pressure reduction step**. The specification also points out that this rapid pressure reducing step “creates substantial pressure within the substrate which forces remaining water and cellular debris to be ejected from the substrate” and “creates voids within the substrate and also clears pathways into the substrate ...” See page 6, lines 15-18. Clearly, the lignocellulosic substrate of claim 24, prepared by a process including the **rapid pressure reduction step**, possesses the following feature: containing **voids** (resulting from water removal) and **cleared pathways** (resulting from cell debris ejection).

Sato teaches a method of treating wood, including (a) heating a wood material injected with a synthetic resin solution in a closed container and then (b) reducing pressure in the constrained environment and adjusting its temperature so as to **volatilize a solvent** from the solution. See, e.g., claim 1. Sato further teaches that, to reduce pressure, the vacuum pump is “operated to reduce the pressure in the closed container 1 to 100 Torr or less, preferably 30-60 Torr,” and that “the degree of pressure reduction of the closed container and the temperature-up speed ... are properly controlled by a temperature controller, a programmer controller, or the like corresponding to the kind of injected solution in the wood material.” See column 8, lines 29-33, and column 9, lines 33-40. As illustrated in Example 1, the pressure reduction step taught in Sato is carried out “at a pressure reduction of 50 Torr” and then adjusted “depending on the [the heating temperature].” See column 11, lines 22-23 and lines 27-30. In view of these teachings, a skilled artisan would know that the pressure reduction step taught in Sato is controlled in

view of the temperature in the closed container. It clearly does not occur rapidly (uncontrolled), as required by the process for making the claimed lignocellulosic substrate. As pointed out above, the rapid pressure reduction step is essential to creating voids and cleared pathways, a feature possessed by the lignocellulosic substrate of claim 24. Thus, a skilled artisan would readily know that, absent this step, the product made by the Sato process DOES NOT have this feature, and therefore is different from the lignocellulosic substrate of claim 24.

Like claim 24, claim 27 also covers a lignocellulosic substrate prepared by a process that includes a rapid pressure reduction step. For the same reasons set forth above, the substrate of claim 27 is different from the product made by the Sato process.

Applicants now turn to claim 28. This claim covers a lignocellulosic substrate prepared by a process including the rapid pressure reduction step discussed above and a step of incorporating into the substrate a composition for sterilization, preservative, or modification. As pointed out above, the rapid pressure reduction step creates voids and cleared pathways in the lignocellulosic substrate (resulting from removal of water and cell debris from the substrate). According to the specification, the voids and cleared pathways benefit subsequent treatment with desired compositions (e.g., compositions for sterilization, preservative, and modification). In view of this information, a skilled person in the art would know that the lignocellulosic substrate of claim 28 contains voids and cleared pathways occupied by the composition.

Differently, Sato teaches reducing pressure and adjusting temperature to evaporate a solvent of the resin solution for treating a wood material, but not the rapid pressure reduction step required by claim 28, for creating voids and cleared pathways resulting from removal of water and cell debris. In other words, unlike the lignocellulosic substrate of claim 28, the product prepared by the Sato process does not have the just-noted voids and cleared pathways filled with the resin solution. Clearly, the Sato product is different from the claimed lignocellulosic substrate.

For the reasons set forth above, Applicants respectfully submit that Sato does not anticipate claims 24, 27, and 28.

Rejection under 35 U.S.C. § 103

The Examiner rejects claims 1-25 and 27-30 as obvious over Sato *et al.* (US Patent No. 5,245,154) in view of Zottu (US Patent No. 3,496,645).¹ See the Office Action, page 3, item 6. Applicants respectfully disagree.

Claim 1 will be discussed first. This claim covers a method for conditioning a lignocellulosic substrate, including the steps of (1) subjecting a substrate to radio frequency energy at ambient pressure to heat moisture in the substrate to a temperature at or above the boiling point of water and then (2) **reducing the pressure in a manner causing the moisture to boil or evaporate**. As discussed above, the reducing step should occur in a **rapid** manner. See page 9, *supra*.

As also pointed out above, Sato teaches a step of reducing pressure and adjusting temperature to volatilize a solvent in a resin solution used for treating a wood material. This pressure reduction step, well-controlled in view of the temperature adjustment, does not occur in a rapid manner. See discussions at page 9, *supra*. Clearly, Sato does not suggest a rapid pressure reduction step for removal of water and cell debris from a wood material, a step required by claim 1.

Zottu discloses a process of drying lumber using high frequency heating and circulating atmosphere heating. See column 1, lines 70-72. This reference does not suggest pressure reduction, let alone rapid pressure reduction as required by claim 1. In other words, it does not cure the deficiency of Sato.

In view of the above remarks, Applicants submit that claim 1 is not obvious over Sato in view of Zottu. Nor are claims 2-12 and 14-21, all of which depend from claim 1. Note that claim 13 has been cancelled.

Like claim 1, claims 22 and 23 each cover a method of conditioning a lignocellulosic substrate including the rapid pressure reduction step discussed above. For the same reasons, these two claims are also not obvious over Sato in view of Zottu.

¹ The Examiner mentioned in the office action that Luth *et al* (US 2,387,595), Laskowski *et al* (US 4,620,373) and Neogi *et al* (US 2004/0258941) were cited to show various wood treatment methods, but did not reject any of claims over these references. Applicants therefore have not discussed herein these three references.

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Applicants now turn to claims 24, 25, and 27-30. These claims, all product-by-process claims, cover lignocellulosic substrates prepared by the methods of claims 1, 22, and 23. As discussed above, the claimed substrates contains voids and cleared pathways (which can be filled with a composition for sterilization, preservative, or modification), resulting from the rapid pressure reduction step required by claims 1, 22, and 23. As also pointed out above, neither Sato nor Zottu suggests this rapid pressure reduction step. They clearly also do not suggest a product prepared from a process including this step, which results in the just-mentioned feature of the claimed substrates. In other words, neither reference suggests the lignocellulosic substrate of claims 24, 25, and 27-30. Applicants therefore submit that Sato and Zottu do not render these claims obvious.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment.

In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Extension of Time fee in the amount of \$65 is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account

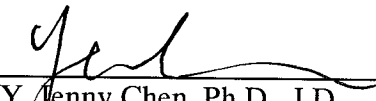
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Respectfully submitted,

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